

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~striketrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please AMEND claims 7, 8, 17, and 18 in accordance with the following:

1. (Previously Presented) A system to estimate a color temperature of a compressed video image and change the color temperature of the compressed video image, the system comprising:

a color temperature estimation unit to receive a video image compressed using a block-based discrete cosine transformation (DCT), generate a discrete cosine (DC) video image corresponding to the compressed video image, and estimate the color temperature of the compressed video image using the DC video image;

a decoder to decode the compressed video image to generate an original video image;
and

a color temperature change unit to determine the estimated color temperature of the compressed video image or a color temperature of the decoded original video image as an application color temperature according to on whether the compressed video image is a moving video image, and change the color temperature of the decoded original video image in accordance with the application color temperature and a color temperature preferred by a user.

2. (Previously Presented) The system of claim 1, wherein the color temperature estimation unit comprises:

a DC video image extraction section to extract DC coefficients of each of a plurality of (DCT) blocks from the compressed video image, each of the DC coefficients representing an average value of pixel values of each of the respective DCT blocks of the compressed video image, define the DC coefficients as average pixel values, and generate a DC video image composed of the average pixel values; and

a color temperature estimation section to estimate a color temperature of the entire

compressed video image from the color temperature of the DC video image.

3. (Previously Presented) The system of claim 2, wherein the DC coefficients of each of the DCT blocks are obtained by multiplying DCT coefficients with respect to coordinates (0,0) of each of the DCT blocks by a predetermined constant in response to the compressed video image being a still video or an internally coded moving video image.

4. (Previously Presented) The system of claim 2, wherein the DC coefficients of each of the DCT blocks of a current frame are calculated as a sum of terms corresponding to four blocks of a previous frame in response to the compressed video image being an interframe-coded moving video image; and

wherein each of the terms is determined as a product of a ratio of an overlapping area of a DCT block whose DC coefficients of the current frame are to be extracted and DCT blocks of a previous frame to the area of the DCT blocks of the previous frame and DC coefficients of each DCT block of the previous frame.

5. (Previously Presented) The system of claim 1, wherein the color temperature change unit comprises:

an application color temperature determination section to determine the estimated color temperature of the compressed video image or the color temperature of the decoded video image as the application color temperature according to whether the compressed video image is a moving video image; and

a color temperature change section to receive the color temperature preferred by the user and change the color temperature of the decoded video image in accordance with the application color temperature and the color temperature preferred by the user.

6. (Previously Presented) The system of claim 5, wherein the application color temperature determination section compares a first color temperature difference between an estimated color temperature of the DC video image of a current frame and an estimated color temperature of the DC video image of a previous frame with a first predetermined critical value in response to the compressed video image being interframe coded; and

determines the application color temperature of the current frame by adding a correction function to the application color temperature of the previous frame.

7. (Currently Amended) The system of claim 5, wherein the application color temperature determination section compares a first color temperature difference between an estimated color temperature of the DC video image of a current frame and an estimated color temperature of the DC video image of a previous frame with a first predetermined critical value in response to the compressed video image being interframe coded;

receives the a decoded current frame from the decoder, estimates the color temperature from the decoded current frame, calculates a second color temperature difference between the estimated color temperature of the DC video image of the current frame and the estimated color temperature of the decoded current frame, and compares the second color temperature difference with a predetermined second critical value in response to the first color temperature difference being larger than the first critical value; and

determines the estimated color temperature of the DC video image of the current frame as the application color temperature of the current frame in response to the second color temperature difference being less than the second critical value.

8. (Currently Amended) The system of claim 5, wherein the application color temperature determination section compares a first color temperature difference between an estimated color temperature of the DC video image of a current frame and an estimated color temperature of the DC video image of a previous frame with a first predetermined critical value in response to the compressed video image being interframe coded;

receives the a decoded current frame from the decoder, estimates the color temperature from the decoded current frame, calculates a second color temperature difference between the estimated color temperature of the DC video image of the current frame and the estimated color temperature of the decoded current frame, and compares the second color temperature difference with a predetermined second critical value in response to the first color temperature difference being larger than the first critical value; and

determines the estimated color temperature of the DC video image of the decoded current frame as the application color temperature of the current frame in response to the second color temperature difference being larger than the second critical value.

9. (Previously Presented) The system of claim 6, wherein the first color temperature difference between the estimated color temperature of the DC video image of the current frame

and the estimated color temperature of the DC video image of the previous frame and the second color temperature difference between the estimated color temperature of the DC video image of the current frame and the estimated color temperature of the decoded current frame are differences between values obtained by multiplying inverse numbers of each color temperature by a predetermined coefficient.

10. (Previously Presented) The system of claim 6, wherein the first and second critical values are approximately 200°K.

11. (Previously Presented) A method of estimating a color temperature of a compressed video image and changing the color temperature of the compressed video image, the method comprising:

receiving a video image compressed using a block-based discrete cosine transformation (DCT), generating a discrete cosine (DC) video image corresponding to the compressed video image, and estimating the color temperature of the compressed video image using the DC video image;

decoding the compressed video image to generate an original video image; and

determining the estimated color temperature of the compressed video image or a color temperature of the decoded original video image as an application color temperature according to whether the compressed video image is a moving video image, and changing the color temperature of the decoded original video image in accordance with the application color temperature and a color temperature preferred by a user.

12. (Previously Presented) The method of claim 11, wherein the generating the DC video image and estimating the color temperature of the compressed video image using the DC video image comprises:

extracting DC coefficients of each of a plurality of DCT blocks from the compressed video image, each of the DC coefficients representing an average value of pixel values of each of the respective DCT blocks of the compressed video image, defining the DC coefficients as average pixel values, and generating a DC video image composed of the average pixel values; and

estimating a color temperature of the entire compressed video image from the color temperature of the DC video image.

13. (Previously Presented) The method of claim 12, wherein the extracting and defining the DC coefficients and generating the DC video image comprises:

obtaining the DC coefficients of each of the DCT blocks by multiplying DCT coefficients with respect to coordinates (0,0) of each of the DCT blocks by a predetermined constant in response to the compressed video image being a still video image or an internally coded moving video image;

defining the DC coefficients of each of the DCT blocks as the average pixel values;
and

generating the DC video image composed of the average pixel values.

14. (Previously Presented) The method of claim 12, wherein the extracting and defining the DC coefficients and generating the DC video image comprises;

calculating the DC coefficients of each of the DCT blocks of a current frame as a sum of terms corresponding to four blocks of a previous frame in response to the compressed video image being an interframe coded moving video image, wherein each of the terms is determined as a product of a ratio of an overlapping area of a DCT block whose DC coefficients of the current frame are to be extracted and DCT blocks of a previous frame to the area of the DCT blocks of the previous frame and DC coefficients of each DCT block of the previous frame;

defining the DC coefficients as the average pixel value; and

generating the DC video image composed of the average pixel values.

15. (Previously Presented) The method of claim 11, wherein the determining the estimated color temperature of the compressed video image or the color temperature of the decoded original video image and changing the color temperature of the decoded video image comprises:

determining the estimated color temperature of the compressed video image or the color temperature of the decoded original video image as the application color temperature according to whether the compressed video image is a moving video image; and

receiving the color temperature preferred by the user and changing the color temperature of the decoded original video image in accordance with the application color temperature and the color temperature preferred by the user.

16. (Previously Presented) The method of claim 15, wherein the determining the

estimated color temperature of the compressed video image or the color temperature of the decoded original video image as the application color temperature comprises:

comparing a first color temperature difference between an estimated color temperature of the DC video image of a current frame and an estimated color temperature of the DC video image of a previous frame with a first predetermined critical value in response to the compressed video image being interframe coded and

determining the application color temperature of the current frame by adding a correction function to the application color temperature of the previous frame in response to the first color temperature difference being smaller than the first critical value.

17. (Currently Amended) The method of claim 15, wherein the determining the estimated color temperature of the compressed video image or the color temperature of the decoded original video image as the application color temperature comprises:

comparing a first color temperature difference between an estimated color temperature of the DC video image of a current frame and an estimated color temperature of the DC video image of a previous frame with a first predetermined critical value in response to the compressed video image being interframe coded;

receiving the a decoded current frame from the decoder, estimating the color temperature from the decoded current frame, calculating a second color temperature difference between the estimated color temperature of the DC video image of the current frame and the estimated color temperature of the decoded current frame, and comparing the second color temperature difference with a predetermined second critical value in response to the first color temperature difference being larger than the first critical value and

determining the estimated color temperature of the DC video image of the current frame as the application color temperature of the current frame in response to the second color temperature difference being less than the second critical value.

18. (Currently Amended) The method of claim 15, wherein the determining the estimated color temperature of the compressed video image or the color temperature of the decoded original video image as the application color temperature comprises:

comparing a first color temperature difference between an estimated color temperature of the DC video image of a decoded current frame and an estimated color temperature of the DC

video image of the previous frame with a first predetermined critical value in response to the compressed video image being interframe coded;

receiving the decoded current frame from the decoder, estimating the color temperature from the decoded current frame, calculating a second color temperature difference between the estimated color temperature of the DC video image of the current frame and the estimated color temperature of the decoded current frame, and comparing the second color temperature difference with a predetermined second critical value in response to the first color temperature difference being larger than the first critical value and

determining the estimated color temperature of the DC video image of the decoded current frame as the application color temperature of the current frame in response to the second color temperature difference being larger than the second critical value.

19. (Previously Presented) The method of claim 16, wherein the first color temperature difference between the estimated color temperature of the DC video image of the current frame and the estimated color temperature of the DC video image of the previous frame and the second color temperature difference between the estimated color temperature of the DC video image of the current frame and the estimated color temperature of the decoded current frame are differences between values obtained by multiplying inverse numbers of each color temperature by a predetermined coefficient.

20. (Previously Presented) The method of claim 16, wherein the first and second critical values are approximately to 200°K.

21. (Previously Presented) A computer readable recording medium having recorded thereon the method of estimating and changing a color temperature of a compressed video image of claim 15.

22. (Currently Amended) The system of claim 7, wherein the first color temperature difference between the estimated color temperature of the DC video image of the decoded current frame and the estimated color temperature of the DC video image of the previous frame and the second color temperature difference between the estimated color temperature of the DC video image of the current frame and the estimated color temperature of the decoded current frame are differences between values obtained by multiplying inverse numbers of each color

temperature by a predetermined coefficient.

23. (Previously Presented) The system of claim 8, wherein the first color temperature difference between the estimated color temperature of the DC video image of the current frame and the estimated color temperature of the DC video image of the previous frame and the second color temperature difference between the estimated color temperature of the DC video image of the current frame and the estimated color temperature of the decoded current frame are differences between values obtained by multiplying inverse numbers of each color temperature by a predetermined coefficient.

24. (Previously Presented) The system of claim 7, wherein the first and second critical values are approximately 200K.

25. (Previously Presented) The system of claim 8, wherein the first and second critical values are approximately 200K.

26. (Previously Presented) The method of claim 17, wherein the first color temperature difference between the estimated color temperature of the DC video image of the current frame and the estimated color temperature of the DC video image of the previous frame and the second color temperature difference between the estimated color temperature of the DC video image of the current frame and the estimated color temperature of the decoded current frame are differences between values obtained by multiplying inverse numbers of each color temperature by a predetermined coefficient.

27. (Previously Presented) The method of claim 18, wherein the first color temperature difference between the estimated color temperature of the DC video image of the current frame and the estimated color temperature of the DC video image of the previous frame and the second color temperature difference between the estimated color temperature of the DC video image of the current frame and the estimated color temperature of the decoded current frame are differences between values obtained by multiplying inverse numbers of each color temperature by a predetermined coefficient.

28. (Previously Presented) The method of claim 17, wherein the first and second critical

values are approximately 200K.

29. (Previously Presented) The method of claim 18, wherein the first and second critical values are approximately 200K.

30. (Previously Presented) A computer readable recording medium having recorded thereon the method of estimating and changing a color temperature of a compressed video image of claim 12.

31. (Previously Presented) A computer readable recording medium having recorded thereon the method of estimating and changing a color temperature of a compressed video image of claim 15.